WHAT IS CLAIMED IS:

1. A heat exchanger performing heat exchange between an external fluid flowing outside thereof and an internal fluid flowing therein, comprising:

a core portion including a plurality of tubes arranged in at least one row, the tubes defining first passages through which the internal fluid flows and second passages through which the internal fluid flows after passed through the first passages;

an introducing portion through which the internal fluid is introduced, the introducing portion connected to the core potion to make communication with the first passages;

a discharging portion through which the internal fluid is discharged, the discharging portion connected to the core portion to make communication with the second passages;

a collecting portion connected to the core portion, the collecting portion forming a first space communicating with the first passages in a first section of the core portion and a second space communicating with the first passages in a second section of the core portion; and

a distributing portion connected to the core portion, the distributing portion forming a first space communicating with the second passages in the first section of the core portion and a second space communicating with the second passages in the second section of the core portion,

wherein the distributing portion communicates with the collecting portion through a communication part having a first communicating portion and a second communicating portion, the first

communicating portion is disposed to allow communication between the first space of the collecting portion and the second space of the distributing portion, and the second communicating portion is disposed to allow communication between the second space of the collecting portion and the first space of the distributing portion.

2. The heat exchanger according to claim 1, wherein

the tubes are arranged in two rows, the first passages are formed in a first row of tubes and the second passages are formed in a second row of tubes,

the first communicating portion and the second communicating portion are disposed to cross each other, thereby to provide an intersectional part.

3. The heat exchanger according to claim 2, wherein

the collecting portion and the distributing portion are provided by tank portions, one of the tank portions is arranged downstream of the other with respect to a flow direction of the external fluid, and

the tank portions are divided at middle positions thereof and the intersectional part is disposed at the middle positions of the tank portions.

4. The heat exchanger according to claim 2, wherein

the collecting portion and the distributing portion are provided by tank portions, one of the tank portions is arranged downstream of the other with respect to a flow direction of the

external fluid, and

the intersectional part is provided outside of the tank portions.

5. The heat exchanger according to claim 2, wherein

the collecting portion and the distributing portion are provided by tank portions, one of the tank portions is arranged downstream of the other with respect to a flow direction of the external fluid,

the communication part is provided by a connecting tank member arranged between the tank portions,

the connecting tank member is divided into a first space and a second space, the first communicating portion is provided by the first space, and the second communicating portion is provided by the second space.

6. The heat exchanger according to claim 1, wherein

the tubes are arranged in two rows, the first passages are formed by a first row of tubes and the second passages are formed by a second row of tubes,

the distributing portion forms a first tank portion defining the first space and a second tank portion defining the second space, and

one of the first and second tank portions is arranged upstream of the other with respect to a flow direction of the external fluid.

7. The heat exchanger according to claim 6, wherein

the collecting portion is divided into the first space and the second space by a separator,

the first communicating portion is provided at an end of the collecting portion to allow communication between the first space of the collecting portion and the second tank portion, and

the second communicating portion is provided at an opposite end of the collecting portion to allow communication between the second space of the collecting portion and the first tank portion.

8. The heat exchanger according to claim 6, wherein the collecting portion is provided downstream of the first and second tank portions with respect to the flow direction of the external fluid.

9. The heat exchanger according to claim 1, wherein

the tubes are arranged in two rows, the first passages are formed in a first row of tubes and the second passages are formed in a second row of tubes,

the collecting portion forms a first tank portion defining the first space and a second tank portion defining the second space, and

one of the first and second tank portions is arranged upstream of the other with respect to a flow direction of the external fluid.

10. The heat exchanger according to claim 9, wherein

the first communicating portion is provided at an end of the distributing portion to allow communication between the second tank portion and the first space of the distributing portion, and

the second communicating portion is provided at an opposite end of the distributing portion to allow communication between the first tank portion and the second space of the distributing portion.

11. The heat exchanger according to claim 9, wherein the distributing portion is provided upstream of the first and second tank portions with respect to the flow direction of the external fluid.

12. The heat exchanger according to claim 1, wherein

each of the tubes has a flat tube cross-section and defines a plurality of passage spaces therein, and

the first passages and the second passages are defined by the passage spaces in the tube.

13. A heat exchanger performing heat exchange between an external fluid flowing outside and an internal fluid flowing therein, comprising:

a core portion including first tubes defining first passages through which the internal fluid flows and second tubes defining second passages through which the internal fluid flows after passed through the first passages, the first tubes and the second tubes being alternately arranged in a row;

an introducing portion connected to the core portion, the introducing portion forming a plurality of communication holes to allow communication between the introducing portion and the first tubes;

a discharging portion connected to the core portion, the discharging portion forming a plurality of communication holes to allow communication between the discharging portion and the second tubes;

a first tank portion connected to the core portion; and

a second tank portion connected to the core portion and arranged substantially parallel to the first tank portion,

wherein the first tank portion forms first inflow holes to allow communication between the first tank portion and the first tubes in a first section of the core portion and first outflow holes to allow communication between the first tank portion and the second tubes in a second section of the core portion,

wherein the second tank portion forms second inflow holes to allow communication between the first tubes in the second section of the core portion and the second tank portion and second outflow holes to allow communication between the second tank portion and the second tubes in the first section of the core portion.

14. The heat exchanger according to claim 13, wherein the first tubes and the second tubes are arranged such that a set of the first tubes and a set of the second tubes are alternately arranged, and each set includes a predetermined number of tubes.

15. The heat exchanger according to claim 1, wherein the core portion is arranged such that the tubes are layered in a vertical direction.

16. The heat exchanger according to claim 1, further comprising a plurality of inlets through which the internal fluid is introduced in the introducing portion.

17. The heat exchanger according to claim 1, wherein the core portion forms a multi-flow-type core in which the tubes are arranged such that the internal fluid flows in the plurality of tubes at the same time.

18. The heat exchanger according to claim 1, wherein the tubes are in forms of serpentine and the core portion forms a multiple-pass, serpentine-type core.

19. The heat exchanger according to claim 1, wherein the introducing portion, discharging portion, collecting portion and distributing portion are provided by tank portions.

20. The heat exchanger according to claim 19, wherein the tank portion is formed of a tank plate forming a groove and a communication plate forming communication holes, and the communication plate is joined to the tank plate.

21. The heat exchanger according to claim 1, wherein the core portion is disposed such that the internal fluid flows in the first passages in an upward direction.

22. The heat exchanger according to claim 1, wherein the internal

fluid is refrigerant.

23. A method of using the heat exchanger according to claim 22 in combination with an internal heat exchanger performing heat exchange between a high temperature refrigerant and a low temperature refrigerant.

24. The method according to claim 23, wherein the heat exchanger is used further in combination with an ejector.

25. A method of using the heat exchanger according to claim 22 in a refrigerant cycle in which a gas-liquid separator is arranged upstream of one of a pressure-reducing device and the heat exchanger.

26. The heat exchanger according to claim 13, wherein the core portion is arranged such that the tubes are layered in a vertical direction.

27. The heat exchanger according to claim 13, further comprising a plurality of inlets through which the internal fluid is introduced in the introducing portion.

28. The heat exchanger according to claim 13, wherein the core portion forms a multi-flow-type core in which the tubes are arranged such that the internal fluid flows in the plurality of tubes at the same time.

29. The heat exchanger according to claim 13, wherein the tubes are in forms of serpentine and the core portion forms a multiple-pass, serpentine-type core.

30. The heat exchanger according to claim 13, wherein the introducing portion and discharging portion are provided by tank portions.

31. The heat exchanger according to claim 29, wherein the tank portion is formed of a tank plate forming a groove and a communication plate forming communication holes, and the communication plate is joined to the tank plate.

32. The heat exchanger according to claim 13, wherein the core portion is disposed such that the internal fluid flows in the first passages in an upward direction.

33. The heat exchanger according to claim 13, wherein the internal fluid is refrigerant.

34. A method of using the heat exchanger according to claim 33 in combination with an internal heat exchanger performing heat exchange between a high temperature refrigerant and a low temperature refrigerant.

35. The method according to claim 34, wherein the heat exchanger is used further in combination with an ejector.

36. A method of using the heat exchanger according to claim 33 in a refrigerant cycle in which a gas-liquid separator is arranged upstream of one of a pressure-reducing device and the heat exchanger.

37. A method of using the heat exchanger according to claim 33 in a refrigerant circuit having a switching valve that is switchable a flow direction of the refrigerant in the circuit.

38. A method of using the heat exchanger according to claim 33 as an evaporator during a cooling operation and as a radiator during a heating operation.